

## \*CHAPTER 7

### CARPET CARE

#### Section 1—GENERAL

**7.1.1 Introduction.** This chapter covers the custodial maintenance of carpets used in service facilities, other than medical and industrial facilities.

#### Section 2— MAINTENANCE REQUIREMENTS

**7.2.1 Determinants of Maintenance Requirements.** Custodial maintenance for various types and colors of carpet consists of the same basic tasks; however, these tasks must be performed with varying frequencies primarily determined by a) carpet construction and installation, b) types and concentrations of soiling, c) amount of foot traffic, d) the desired level of appearance.

#### **7.2.2 Carpet Construction and Installation.**

**7.2.2.1 Color and Pattern.** A light, solid color carpet will show surface soils, litter, and stains more readily than would a mixed color, patterned carpet. Therefore, policing, routine vacuuming, and surface shampooing would have to be scheduled more frequently for the light, solid color carpet.

**7.2.2.2 Construction.** Carpets constructed from natural fibers, such as wool or with natural backing, such as jute, are sensitive to damage from overexposure to liquids during carpet shampooing. Wool carpet may shrink and jute backing may separate. Caution should always be observed when exposing carpet to moisture to minimize the amount of liquid and the length of time the carpet remains damp. Additionally, the effect of the cleaning solution and the shampooing process should be predetermined on a small, obscure area of the carpet.

**7.2.2.3 Carpet with cut pile** will shed carpet fibers more readily than would carpet with looped pile during vacuuming with an aggressive carpet vacuum. Carpet which has a short pile height will require less frequent vacuuming with a heavy-duty pile lifter since routine vacuuming will be more effective in the removal of embedded soil.

**7.2.2.4** Some types of adhesives used to adhere carpet to the floor may be sensitive to moisture.

**7.2.3 Types of Soil.** The following types of soil

deposited on a carpeted area significantly affect the custodial maintenance requirements:

*Surface Soil and Litter* — Soil which remains on or near the surface of the carpet, such as paper clips, rubber bands, small bits of paper, loose dry dirt, etc.

*Embedded or Sticky Soil* — Soil which becomes embedded or adheres to the carpet fibers, such as embedded grit, soluble or wet soil, such as mud, airborne oily soil, etc., and sticky substances, such as gum, asphalt, waxes, etc.

*Stains* — Substances which penetrate the basic carpet fiber, such as ink, blood, iodine, etc.

**7.2.4 Soiling.** The amount of foot traffic in a carpeted area will largely determine the volume of soil and the damage caused by that soil. For the purpose of establishing maintenance task frequencies, the following classifications are helpful.

*Public, trafficked areas* are areas which are subject to heavy foot traffic and large volumes of soil, such as entrances, areas in front of elevators, main corridors on entry levels, lobbies in front of rest rooms, dining areas, etc.

*Secondary areas* are areas which are not used by a large number of people or are not subject to a large amount of foot traffic. By the time people reach these areas, most of the dirt brought in on their shoes has been “walked off”. Secondary areas are generally private offices, spaces far removed from entrances, or on upper floors.

*Optional areas* are areas which receive little foot traffic or soil, and are not normally occupied or seen by the general population of the building. This includes areas such as file rooms, very low use private offices, etc.

**7.2.5 Desired Level of Maintenance.** The level of maintenance to be provided a carpeted area is usually subject to budgetary constraints. The

selection of carpet maintenance tasks and task frequencies should be based on the benefits resulting from the performance of the tasks. The following priority ranking should be used as a guideline in selecting a carpet maintenance program.

**Priority #1** — Those tasks which must be performed to insure a safe, healthy environment. An example of such a task would be the daily routine vacuuming of carpet in dining facilities to prevent the accumulation of food which provides a medium for bacteria growth.

**Priority #2** — Those tasks which must be performed in order for the occupants of the area to complete their assigned mission. An example of such a task would be the frequent vacuuming of an electronic data processing area to control the level of dust within the area, since high concentrations of dust would

interfere with the operation of the data processing equipment.

**Priority #3** — Those tasks which, if performed, would economically justify their performance. An example of such a task would be monthly vacuuming with a heavy-duty pile lifter vacuum to remove embedded grit. If the grit were not removed on a frequent basis then its sharp cutting edges would significantly reduce the expected life of the carpet.

**Priority #4** — Those tasks which contribute only to the appearance of an area. An example of such a task would be the frequent routine vacuuming of low trafficked areas to remove surface soil.

#### 7.2.6 Guidelines for Establishing Custodial Maintenance Task Frequencies.

	PUBLIC TRAFFICKED AREAS	SECONDARY AREAS	OPTIONAL AREAS
POLICING	—	DAILY	WEEKLY
ROUTINE VACUUMING	DAILY	WEEKLY	MONTHLY
STAIN REMOVAL	UPON DISCOVERY	UPON DISCOVERY	UPON DISCOVERY
HEAVY DUTY VACUUM	MONTHLY	QUARTERLY	YEARLY
SURFACE SHAMPOOING	QUARTERLY	TWICE PER YEAR	YEARLY
EXTRACTION CLEANING	YEARLY	EVERY TWO YEARS	EVERY THREE YEARS

**Figure 41. Guidelines for Carpet Maintenance Frequencies.**

### Section 3 — MAINTENANCE TASKS

**7.3.1 Definitions of Tasks.** The following procedures or tasks are normally adequate for all types of carpet.

**7.3.1.1** Policing involves the removal of dry litter, such as paper clips, rubber bands, gum, etc., and unsightly concentrations of dry dirt and grit. Policing is normally performed in areas where it is important to maintain an acceptable appearance between routine vacuumings or to

prepare an area for vacuuming by removing objects which should not be ingested into a vacuum cleaner.

**7.3.1.2** Routine vacuuming involves the removal of surface soil and a certain amount of embedded grit from between carpet fibers. Routine vacuuming is only accomplished by the use of a carpet vacuum with a rotating agitator brush.



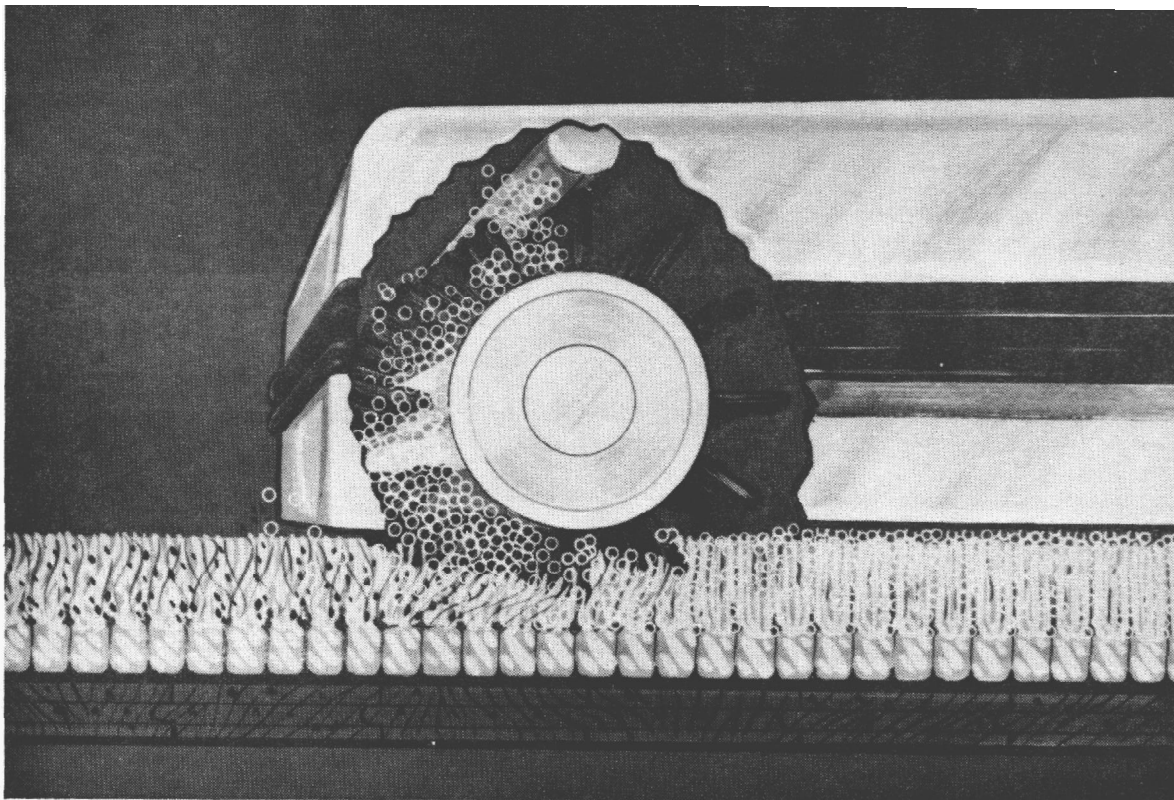
**Figure 42. Routine Vacuuming.**

7.3.1.3 Stain removal involves the treatment of stains and other discolorations on an as-needed basis. This removal is accomplished by a variety of methods and combinations of methods and is most easily performed before the stain has dried or "set".

7.3.1.4 Heavy-duty vacuuming involves the use of a very aggressive vacuum and agitating brush to remove deeply embedded soil and grit, and to aid in restoring the lost resiliency of the carpet pile caused by foot traffic.

7.3.1.5 Surface shampooing involves the removal of discolorations and soil adhering to carpet fibers on or near the surface of the carpet. It involves the application of a foam generated within the shampooer (rather than a liquid) and is accomplished with a dry foam shampooer.

7.3.1.6 Extraction cleaning is the most thorough method of carpet cleaning and removes not only surface soils and stains but also embedded soils and residues from the dry foam shampooing method. Extraction cleaning in-



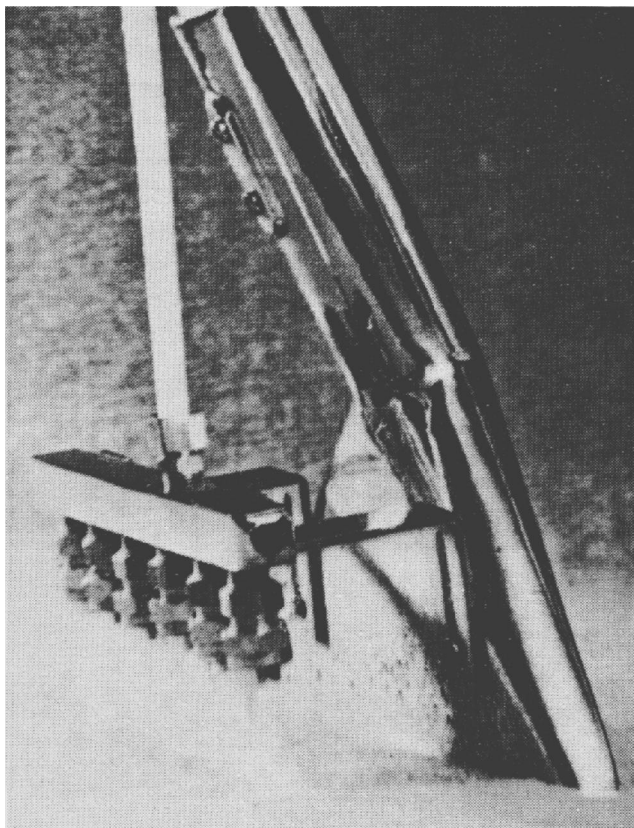
**Figure 43. Dry Foam Shampooing Process.**

volves the combined application of a highly-atomized water detergent solution and the immediate vacuuming of the residue solution from the carpet. Under most conditions, a carpet maintenance program should provide one extraction cleaning for every three surface shampooing.

7.3.1.7 There are additional methods of carpet shampooing; however, in most situations, these methods may cause excessive damage to

the carpet, may be too costly, or are not as effective as a combination of the dry foam and water methods.

7.3.1.8 The repair of damaged carpet is generally a specialized function requiring techniques, skills, materials, and tools not normally available to the custodial workforce. However, damaged carpet can be a hindrance to effective custodial carpet maintenance and should be reported upon discovery.



**Figure 44. Water Extraction Cleaning.**

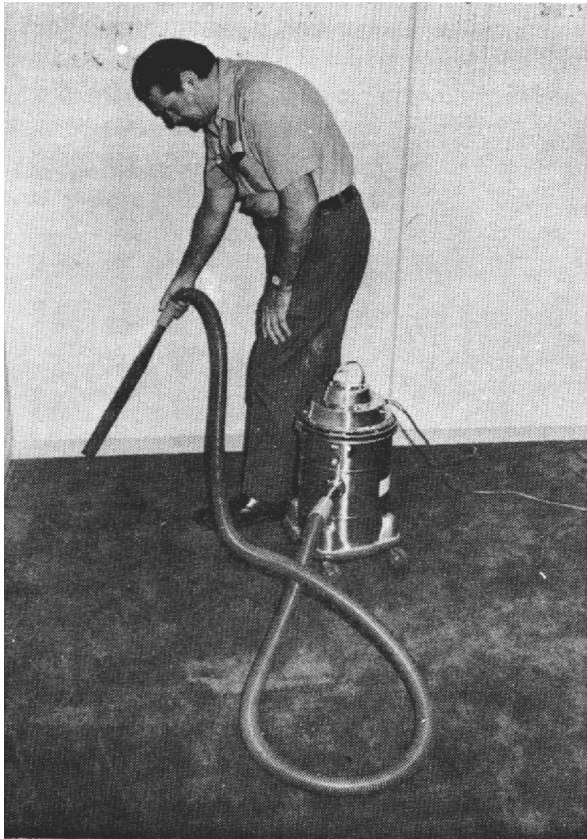
#### **Section 4—CUSTODIAL MAINTENANCE EQUIPMENT, TOOLS, AND CHEMICALS**

##### **7.4.1 Powered Equipment and Accessories**

7.4.1.1 A 5- to 8-gallon capacity tank vacuum can be used for carpet policing, to vacuum the carpet in hard-to-reach areas, and to pick up the residue from the dry foam shampooing process. If the tank vacuum is equipped for wet, as well as dry pick-up, then it can be used to vacuum up spills and moisture

from carpet. The tank vacuum should be equipped with a flexible hose, wand, floor tool and crevice tool for carpet maintenance. When used with other attachments, the tank vacuum becomes a useful general purpose cleaning tool.

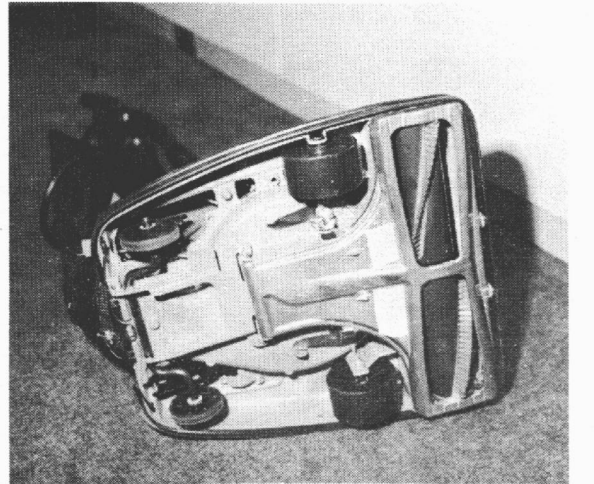
**CAUTION:** A tank vacuum cannot be used for routine vacuuming since it removes only a minimum amount of embedded grit.



**Figure 45. Wet/dry Tank Vacuum.**

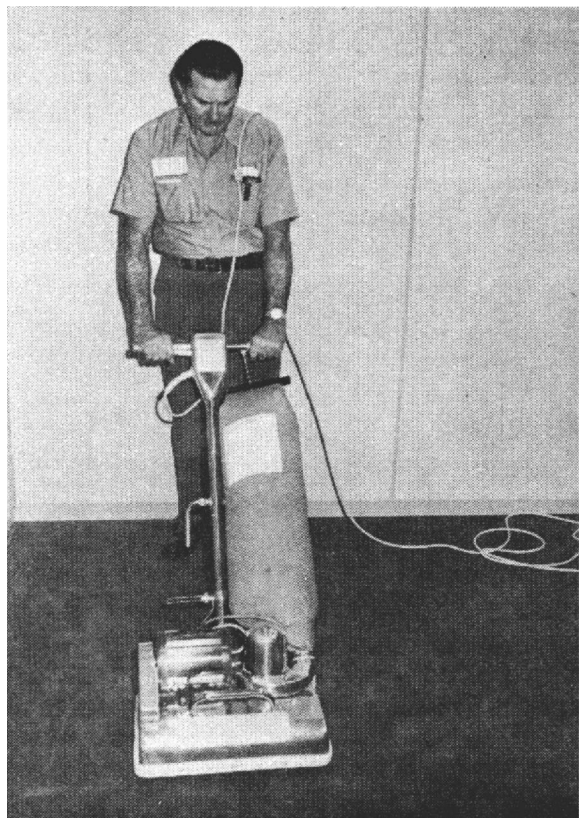
7.4.1.2 An upright carpet vacuum with a rotating agitator brush must be used for routine vacuuming. The agitator brush serves to agitate the carpet fibers and remove some of the embedded grit. The agitator brush should be ad-

justable for carpets with different pile heights, and the vacuum swath should be as wide as is practical to maximize the speed of vacuuming without impairing maneuverability.



**Figure 46. Upright Carpet Vacuum with Agitator Brush.**

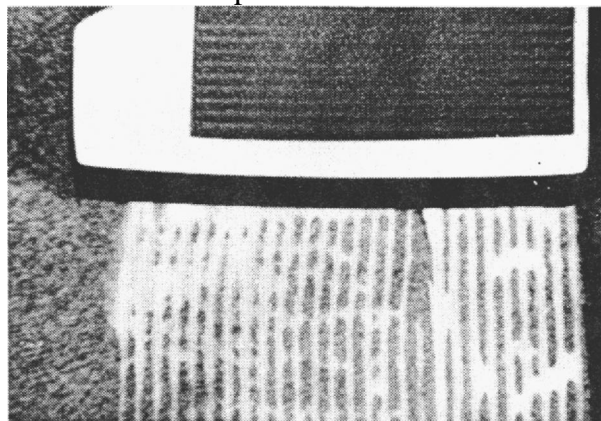
7.4.1.3 A heavy-duty pile lifter vacuum is used for removing embedded grit and for restoring the lost resiliency of the carpet pile caused by foot traffic. The pile lifter vacuum has a very aggressive vacuum and agitator brush which are normally powered by separate motors. The agitator brush should be adjustable for carpets with different pile heights.



**Figure 47. Heavy-Duty Pile Lifter Vacuum.**

7.4.1.4 A dry foam shampooer is used for the removal of large area stains and for complete surface shampooing. The dry foam process involves foam on the carpet, and the removal of the foam by a vacuum. The advantage of the foam system is that the small water content of the foam minimizes water damage to the carpet. The disadvantages of the system are that a residue of the foam is left embedded in the carpet, only surface soils and stains are removed, and heavier concentrations of soil may require several shampooings. The carpet should be vacuumed with a heavy-duty pile lifter vacuum prior to shampooing to remove as much soil as is practical, and also after shampooing to restore

the resiliency of the carpet pile and to remove much of the shampoo residue.



**Figure 48. Dry Foam Carpet Shampooer.**

7.4.1.5 A water extraction unit is used for the periodic removal of embedded grit, dry foam shampoo residue, and heavy soil and stains. The process involves the application of a highly-atomized water solution to the carpet through a “wand” followed by a continuous high vacuum. If the carpet has been cleaned previously by the dry foam process, there will be sufficient shampoo in the carpet for effective cleaning, otherwise a detergent must be added to the cleaning solution. The solution dissolves the dirt and dry foam residue, and the vacuum flushes or removes the dirt, residue, grit and moisture. The carpet is left in an almost dry condition. The advantages of the water extraction process are that it leaves almost no residue, it removes embedded grit, and is effective at removing heavier concentrations of soil and stains. The disadvantages of the system are that it is costly and the water may damage the carpet. As with the dry foam methods, the carpet should be vacuumed with a heavy-duty pile lifter vacuum before the water extraction process to remove as much soil as is practical and also after the process to restore the resiliency of the carpet pile.





**Figure 49. Water Extraction Unit.**

7.4.1.6 Some recently constructed buildings are equipped with central vacuum systems consisting of a powerful central vacuum and a distribution system with numerous vacuum inlets. A flexible hose and wand may be connected to any available outlet. Since a central vacuum system has no provision for agitating the carpet pile to remove embedded soil, this system should not be relied on for the routine vacuuming of carpet. It is, however, an effective system for policing and for the removal of surface soil from carpets, as well as other miscellaneous custodial vacuuming tasks.

#### **7.4.2 Manual Tools.**

7.4.2.1 A synthetic bristle broom and dust pan can be used to police surface litter, such as bits of paper, rubber bands, and paper clips from carpet areas.

7.4.2.2 A small putty knife can be useful in removing chewing gum and other sticky substances from the surface of carpet.

7.4.2.3 A manual carpet sweeper can be used to police carpeted areas.



**Figure 50. Carpet Sweeper.**

#### **7.4.3 Chemicals.**

7.4.3.1 An aerosol fluorocarbon can be used to "freeze" chewing gum, asphalt, wax, etc. so it becomes brittle and easily removed from carpet with a putty knife.

7.4.3.2 A foaming type shampoo concentrate is required for the dry foam shampoo method. The dry foam shampooer will generate a low moisture content foam and then apply the foam to the carpet. Only a low foam shampoo concentrate should be used with the water extraction unit if a detergent is required at all. If the extraction unit has a recovery tank, then an anti-foam emulsion must be added to the recovery tank to prevent the tank from becoming filled with foam. Most manufacturers of carpet shampoo claim their product has retarding properties; however, many conflicts of opinion presently exist about their effectiveness. Their success would largely depend upon such factors as the type and concentrations of soil, the type of carpet, the type maintenance the carpet receives, the age of the carpet, etc.

7.4.3.3 Removal of most stains can be accomplished with a commercial stain removal kit which contains the following groups of stain removers as a minimum:

(1) Mild alkaline spotters containing enzymes for the break-up of protein based substances, such as blood, food, vomit.

(2) Dry solvent base spotters for use on grease, tar, gum and paint.

(3) Mild acid reducing solutions for removing caustic or alkaline substances, animal feces, and urine.

(4) Dry, inert, absorbent powder to be used with the above.

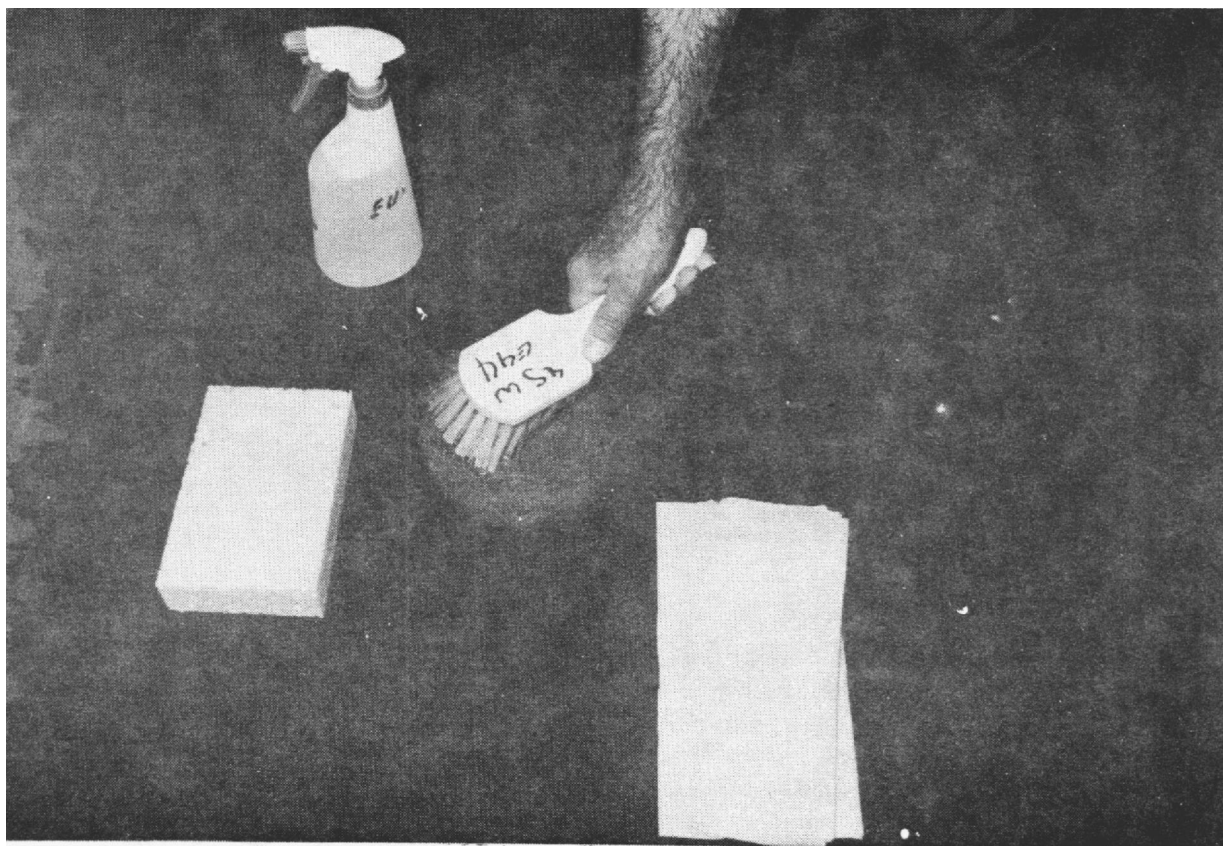


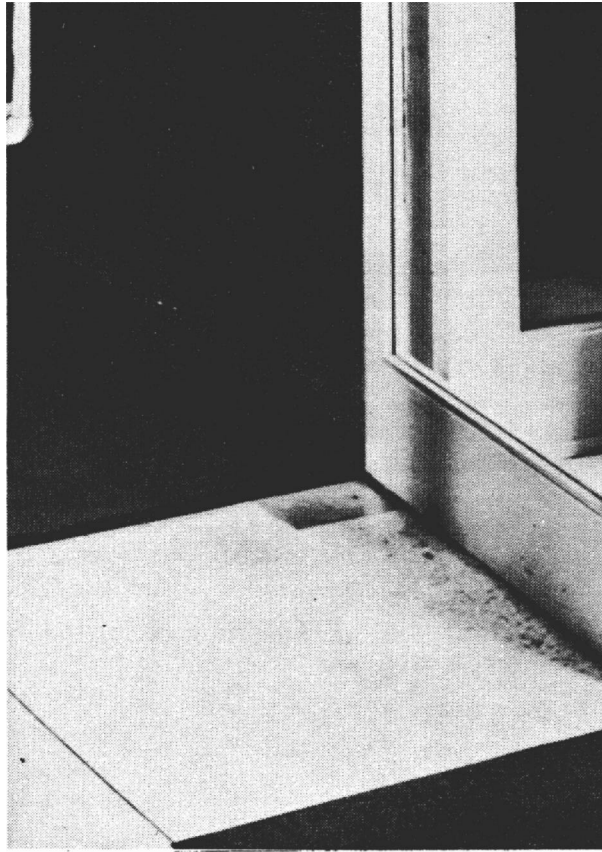
Figure 51. Stain Removal.

## Section 5 — SOIL PREVENTION

7.5.1 Obviously the cost of carpet maintenance can be significantly reduced, and the appearance and life of carpet can be improved and extended if the amount of soil deposited on a carpeted area is reduced. Just as there are many different sources and types of soil to which carpet becomes exposed, there are also many actions which can be taken to reduce the amount

of soil. However, the most effective means of soil prevention or reduction are entrance mats and adequate waste and ash receptacles. Part of an effective carpet maintenance program involves the continued surveying of an area to determine whether there are actions which can reduce the soiling rate and whether they are economically justifiable.





**Figure 52. Entrance Mats.**

## **Section 6 — STATIC CHARGE**

**7.6.1 Source.** Carpet which has not been manufactured with special conductive materials to allow the dissipation of accumulated electrostatic charges may develop such charges in excess of 10,000 volts. The accumulation of static electricity in carpet is not only annoying but may also cause carpet to attract a larger amount of soil. Additionally, the attraction between particles of soil and the carpet make vacuuming and shampooing less effective.

**7.6.2 Prevention.** The simplest means of reducing static electricity is to increase the moisture content (humidity) of the surrounding area allowing the accumulated static electricity to discharge into the air. Humidifying units are available that can be added to air conditioning units. A second method of reducing static charge is through application of an antistatic treatment. However, such treatment is costly and its effects may last as little as thirty days.

## **Section 7 — CARPET CARE PROCEDURES — TRAINING GUIDE**

### **7.7.1 Policing.**

#### *7.7.1.1 Equipment Needed:*

- (1) Small broom
- (2) Dust pan
- (3) or a manual carpet sweeper.

#### *7.7.1.2 Doing the Job:*

- (1) Observe the area for surface litter or soil.

- (2) Pick-up litter either by hand or by sweeping the litter into the dust pan or use the carpet sweeper.

- (3) Dispose of collected litter into custodial cart or adjacent waste container.

#### *7.7.1.3 Care of Equipment:*

- (1) Keep broom free of loose straws and lint.

(2) Damp wipe dust pan and carpet sweeper with neutral detergent as required to remove evident soil.

#### **7.7.2 Routine vacuuming.**

##### *7.7.2.1 Equipment Needed:*

(1) Upright carpet vacuum with adjustable agitator brush.

##### *7.7.2.2 Before Vacuuming:*

(1) Inspect the vacuum cleaner dirt bag to determine the level of soil. The bag should not be allowed to become over half filled. Take special care when emptying the bag to avoid spreading dirt.

(2) Police the immediate area to remove items which should not be ingested into the vacuum cleaner.

(3) Unless only traffic patterns are being vacuumed, create as much open area as practical by moving items such as trash cans, chairs, and portable furniture.

(4) Adjust the agitating brush in accordance with the carpet pile height.

##### *7.7.2.3 Doing the Job.*

(1) When vacuuming traffic patterns in a large open area, begin at one end of the pattern and proceed to the other end or as far as the electrical cord permits. Then, return alongside and slightly overlap the edge of each previous pass. This pattern may have to be repeated for heavily soiled areas.

(2) When vacuuming obstructed areas, use a few back-and-forth strokes as required.

(3) Return any items moved to their proper locations.

##### *7.7.2.4 Care of Equipment:*

(1) Check dirt bag and empty as required.

(2) Prior to returning the equipment to storage, wipe dust from the machine and the cord, spot clean smudges and marks with neutral detergent and sponge.

#### **7.7.3 Stain Removal.**

##### *7.7.3.1 Equipment Needed:*

- (1) A commercial stain removal kit.
- (2) Wet pickup vacuum (for larger spills).
- (3) Paper towels or blotters.

##### *7.7.3.2 Doing the Job:*

(1) Treat the stain as quickly as possible after it is discovered.

(2) Scrape and blot up as much of the loose matter as possible.

(3) Pre-test any questionable fibers with the spotter to be used.

(4) When removing stains, work from the outside edges of the soiled area inward to the center of the spot to minimize spreading the spot.

(5) Follow the instructions contained in the commercial spot removal kit.

#### **7.7.4 Heavy-duty Vacuuming and Pile Lifting.**

##### *7.7.4.1 Equipment Needed:*

(1) Heavy-duty pile lifter with adjustable agitator brush.

##### *7.7.4.2 Before Vacuuming:*

(1) Follow steps (1) to (4) of "Before vacuuming," paragraph 7.7.2.2.

##### *7.7.4.3 Doing the Job:*

(1) Follow steps (1) to (3) of "Doing the Job," paragraph 7.7.2.3.

##### *7.7.4.4 Care of Equipment:*

(1) Follow steps (1) to (3) of "Care of equipment," paragraph 7.7.2.4.

#### **7.7.5 Surface Shampooing.**

##### *7.7.5.1 Equipment Needed.*

- (1) One heavy-duty pile lifter vacuum
- (2) One dry foam carpet shampoo machine
- (3) One plastic pail
- (4) One plastic funnel
- (5) One measuring cup
- (6) One scrub brush
- (7) One sponge

*Note:* When shampooing carpets, it is a good idea to have a wet vacuum available in case of spills or malfunctions of the shampoo machine which put excessive amounts of solution on the carpet.

##### *7.7.5.2 Chemicals Needed:*

- (1) Dry foam carpet shampoo
- (2) Stain removal kit

##### *7.7.5.3 Before Vacuuming:*

(1) Remove as much furniture from the area as is practical.

(2) Vacuum the area with a heavy-duty pile lifter in accordance with paragraph 7.7.5, "Heavy-duty vacuuming and pile lifting".

(3) Treat stains in accordance with paragraph 7.7.3, "Stain removal".

(4) Be sure that custodial worker's shoes are clean or, preferably, wear clean, rubber, overshoes when shampooing carpet.

(5) Restrict traffic into the area.

(6) Using the plastic pail and the measuring cup, prepare the shampoo solution in accordance with the manufacturer's directions. Using the funnel, carefully pour the solution into the tank of the carpet shampoo machine.

(7) Before turning on the machine, follow the manufacturer's directions for adjusting the height of the agitator brush to be compatible with the pile of the carpet. Remember, if the brush is adjusted too high, it will not produce effective results; if the brush is too low, there will be excessive wear on the carpet and unnecessary strain on the machine.

#### 7.7.5.4 *Doing the Job:*

(1) Begin scrubbing next to the wall or an edge of the carpeted area. Adjust the foam control and pace the motion of the machine so that sufficient, but not excessive, foam is applied to the carpet.

(2) Move the machine forward as far as possible in a straight line. Then, move the machine backwards over the same area.

(3) At the end of each forward and backward pass, move the machine to one side and repeat this pattern on an adjacent area. The degree of overlap should be determined by the level of soil in the carpet. For instance, if the carpet is heavily soiled, it may be necessary to overlap more than half of each previous pass for effective cleaning. In areas where soil is light, an overlap of one to two inches may be sufficient. In cases of extreme soiling it may be necessary to shampoo twice. Any second shampooing should follow a pattern which is generally at right angles to that of the first shampooing.

(4) Corners and other areas which are not accessible to the machine may be shampooed by taking some of the foam generated by the machine and applying it manually with the scrub brush.

(5) After allowing about one hour drying time, vacuum the entire area with the heavy-duty pile lifter vacuum in accordance with paragraph 7.7.5. "Heavy-duty vacuuming and pile lifting". However, after each forward pass, pull the pile lifter vacuum backwards over the same area to lift out any footprints or wheel tracks.

(6) Allow sufficient time for the carpet to dry before it is subjected to heavy foot traffic. Drying time will vary considerably due to changes in temperature and humidity.

(7) When replacing the furniture in the area, place small pieces of plastic underneath legs or other parts which come in contact with the carpet. This will prevent stains from rust and dyes which could occur if the carpet is still damp. Remove the plastic after the carpet has thoroughly dried.

#### 7.7.5.5 *Care of Equipment*

(1) Follow the manufacturer's directions for draining any excess solution from the shampoo machine. This should be done in a non-carpeted area in case of spills.

(2) Damp wipe the machine and cord with a sponge.

(3) Wind the electrical cord properly around the hooks provided on the machine.

(4) Rinse the bucket, funnel, and measuring cup clean and wash the scrub brush and sponge in clean water.

#### 7.7.6 **Extraction Cleaning.**

##### 7.7.6.1 *Equipment Needed:*

(1) One water-extraction carpet cleaning outfit

(2) One heavy-duty pile lifter vacuum

(3) One plastic pail

(4) One plastic funnel

(5) One measuring cup

(6) One wet/dry tank vacuum

(7) Scrub brush

(8) Sponge

##### 7.7.6.2 *Chemicals Needed:*

(1) Antifoam emulsion and carpet shampoo specifically designed to be used with water extraction system (carpet shampoo to be used only on carpet which has never or seldom been shampooed before).

##### 7.7.6.3 *Before Cleaning:*

(1) Follow steps (1) to (5) in "Before shampooing," paragraph 7.7.5.3.

(2) The water extraction unit should be assembled in accordance with the instructions of the manufacturer of the machine. Some models may be attached directly to a water source while others have a tank as a part of the machine. Some manufacturers recommend the use of hot water with their equipment, others provide a heating element in the solution tank, and others recommend the use of cold water. Although hot water may react more quickly with shampoo residue in the carpet, in general, cold water will provide adequate cleaning without the risk of shrinkage, color bleeding, or damage to the carpet backing which may result from excessive use of hot water.

(3) If the carpet has never or seldom been shampooed, add the proper amount of carpet shampoo solution to the solution tank using the measuring cup and funnel (if the carpet has been previously shampooed three or four times, there

will be sufficient residue in the carpet for effective cleaning).

(4) Add the proper amount of antifoam emulsion to the recovery tank, following any specific directions given by the manufacturer.

*7.7.6.4 Doing the Job:*

(1) Begin in a corner of the area. Stand next to one wall while facing another wall. Stand far enough back so that a comfortable reach will place the spray-vacuum head against the baseboard (usually about 3 feet away).

(2) Activate the spray system while pulling the spray-vacuum head away from the wall in a straight line.

(3) Shut off the spray about 6 inches before the end of the stroke. If the spray-vacuum head can be easily pushed on the carpet, it should be pushed back to the wall, over the same path, with the spray shut off. If the spray-vacuum head cannot be easily pushed, but can only be pulled, it should be lifted at the end of the stroke, returned to the original spot where the pass began, and pulled over the same area with the spray shut off. This technique gives each area a minimum of two passes, one with the spray and the vacuum, and one with the vacuum only.

(4) After making the two passes described above, move the spray-vacuum head and repeat the process.

(5) The degree of overlap and the speed with which the spray-vacuum head is moved on the carpet depends on the level of soil. Along walls, baseboards, and other areas receiving little or no traffic, the machine can be moved quickly and with as little overlap as possible without

leaving streaks. In heavily soiled areas or high traffic areas, the spray-vacuum head should be moved more slowly and each pass should overlap the previous pass by about fifty percent.

(6) The recovery tank should be watched and emptied whenever the foam rises within two or three inches of the top. If foam or water is allowed to enter the vacuum motor system, serious damage or injury may result.

(7) After the entire carpet has been cleaned, it should be allowed to dry approximately one-half hour and vacuumed with the pile lifter type vacuum. When vacuuming a carpet after it has been wet-cleaned, the final passes with the vacuum over each area should always be in the same direction.

(8) When returning furniture and accessories to a carpeted area which has just been cleaned, pieces of plastic should be placed under the legs or any part which touches the carpet. The carpet may still be slightly damp, and subject to stains from rust and dyes.

*7.7.6.5 Care of Equipment:*

(1) Follow the manufacturer's directions for draining the recovery tank. Both the solution and recovery tanks should be rinsed and wiped dry.

(2) The vacuum hose, wand and spray-vacuum head should be rinsed out by flushing clean water through them.

(3) All exterior surfaces of the machine including the electrical cord should be damp cleaned and then wiped dry.

(4) Wind the electrical cord properly around the hooks provided on the machine.

***Summary of Revised, Deleted, or Added Material***

This revision is a complete rewrite and update of existing Army, Navy, and Air Force manuals into a three-department manual.